

Slipped Capital Femoral Epiphysis Physal Stabilization with a Single Screw

Bassam Dhaif, CABS, FRCSI, FRCS(Orth)*, M Stephens, MSc, FRCSI**
F McManus, MCH(Orth), FRCSI**

Objective: To evaluate the outcome of in situ pinning with a single screw fixation for the treatment of Slipped Capital Femoral Epiphysis (SCFE).

Design: It is a retrospective review of 40 patients (54 hips) in the age range of 9-14 years and with an average follow up period of 30 months.

Setting: The Children Hospital, Temple Street, Dublin, Ireland.

Results: The time required for physal closure was variable but it averaged 16 months. No patients had further progression of the slip and the complications were low.

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SCFE is the most common hip disorder in adolescence¹. The aims of treatment are to stop further progression of the slip and to obtain physal closure. Treatment modalities have included cast immobilisation, in situ pinning, bone graft epiphysiodesis²⁻⁴. The aims of this study are to evaluate the outcome of the use of a single screw for the treatment of SCFE and the length of time required to achieve physal stabilisation.

METHODS

We retrospectively studied patients with SCFE treated with a single screw between 1991-1995 at the Children Hospital, Temple Street, Dublin. This included 40 patients (54 hips). The degree of slip was evaluated by Southwick method⁵. All admitted children underwent pinning in situ using a single cannulated Richard's screw (Smith & Nephew) with the use of image intensifier.

RESULTS

Fifty four hips in 40 patients were included in the review. The mean age was 12 years (range 9-14 years). There were 13 male and 27 female. Three cases were acute and 37 were chronic slip. The average duration of symptoms in the chronic cases was 9 weeks. Only in 13 cases a history of trauma was identified and this did not correlate with neither the duration of symptoms nor the degree of slip.

Thirty two patient had mild slip, 4 moderate and 4 severe slip. The incidence of bilaterality was 27 % (11 cases). All children were evaluated at 1 month, 6 months and 12 months interval. The average follow up was 30 months with a range of 12-48 months. Complications were as follows: screw breakage 1, chondrolysis 1, avascular necrosis 1 and a haematoma in one patient. The length of time required for physal closure ranged 12-30 months with an average of 16 months. Follow up radiographs showed no patient had further progression of the slip.

DISCUSSION

In situ fixation using cannulated screw is the standard technique of treatment of SCFE. Walters and Simon suggested the presence of a radiological blind spot that cannot be visualised adequately and this could be the site of penetration of the femoral head by a pin during fixation⁶. The incidence of pin penetration can be minimised by the use of a single central pin^{7,8}. Biomechanically, resistance to further slip is not proportional to the number of screws⁹. The time required for physal closure is variable⁶. In this study physal closure was determined on plain radiographs showing a bridging bone across the physis. Although in our series it averaged 16 months to achieve physal arrest, physal stabilisation is probably achieved earlier.

CONCLUSION

In conclusion, in situ fixation using a single cannulated screw can achieve physal stabilisation in patients with SCFE and can minimize the risk of penetration to the joint. The complication rate was low.

* Senior Registrar
** Consultant Orthopaedic Surgeon
Paediatric Orthopaedics Department
Children Hospital
Temple Street
Dublin, Ireland

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